

Name: _____

PC: Cramer's Rule

Date: _____

Ms. Loughran

Do Now:

1. Solve using an inverse matrix:
- $$\begin{array}{rcl} 4x - 2y & = & 10 \\ 3x - 5y & = & 11 \end{array}$$

We can also use Cramer's rule to solve systems of linear equations.

Steps:

1. Set up a coefficient matrix.
2. Find the determinant of the coefficient matrix. If the determinant $\neq 0$ you can use Cramer's Rule.
3. To find x value, replace first column (x column) with the answer column and find determinant. Now divide this determinant by the original matrix's determinant, this quotient is your x value.
4. To solve for y value, replace second column (y column) with the answer column and find the determinant. Now divide this determinant by the original matrix's determinant, this quotient is your y value.

Let's go back to the Do Now and solve the system using Cramer's Rule.

Solve each of the following systems using Cramer's Rule, if possible.

2.
$$\begin{aligned} 5x + 4y &= 2 \\ -x + y &= -22 \end{aligned}$$

3.
$$\begin{aligned} 2x - 5y &= 2 \\ 3x - 7y &= 1 \end{aligned}$$

4.
$$\begin{aligned} -2x + 8y &= 1 \\ x - 4y &= 5 \end{aligned}$$

Practice

Solve each of the following systems using Cramer's Rule, if possible.

1.
$$\begin{aligned} 3x - 10y &= 15 \\ 5x + 4y &= 22 \end{aligned}$$

2.
$$\begin{aligned} 2x + y &= 0.3 \\ 3x - y &= -1.3 \end{aligned}$$

3.
$$\begin{aligned} x + y - z &= 2 \\ 2x - y + z &= -5 \\ x - 2y + 3z &= 4 \end{aligned}$$

4.
$$\begin{aligned} 2x - 3y + 4z &= 10 \\ 6x - 9y + 12z &= 24 \\ x + 2y - 3z &= 5 \end{aligned}$$

Homework: Textbook p. 646 #s 13-16

